

What is claimed is:

1. An electron bombardment heating apparatus, for heating a heating plate through bombardment of thermions thereon, comprising:

5           a filament for emitting thermions therefrom;

          means for accelerating the thermions emitted from said filament;

          a heating plate being heated through bombardment of the thermions, which are emitted and accelerated; and

10           a heated material supporting member for mounting a material to be heated thereon, wherein a periphery wall of said heated material supporting member, being covered with said heating plate on a ceiling thereof, is made up with a plural number of stages of periphery wall portions disposed vertically, being different  
15           from each other in diameter thereof, and those periphery wall portions are connected with each other through a ring-like horizontal wall extending in radial directions thereof.

          2. The electron bombardment heating apparatus, as described in the claim 1, wherein said heated material supporting member  
20           is made of ceramic.

          3. The electron bombardment heating apparatus, as described in the claim 2, wherein said heated material supporting member is made of silicon carbide impregnated with silicon.

          4. The electron bombardment heating apparatus, as described  
25           in the claim 1, wherein a heat-resistive insulator plate is inserted between the plural pieces of said reflectors.

          5. A temperature controlling apparatus for an electron bombardment heating apparatus, for controlling temperature due to heat generation of a heating plate in the electron bombardment

heating apparatus, in which the heating plate is heated through impingement of accelerated thermions emitted from a filament thereupon, comprising:

an electric power adjuster for controlling filament  
5 electric power to be supplied to the filament;

an emission current adjuster, for measuring emission current flowing between the filament and the heating plate, and for outputting a measurement value of the emission current to said electric power adjuster as a control signal; and

10 a thermal adjuster for measuring the temperature of the heating plate and for outputting the measured temperature value to said electric power adjuster as a control signal, wherein either one of said emission current adjuster or said thermal adjuster is selectively exchanged to be connected with the electric power  
15 adjuster, by means a switch.

6. The temperature controlling apparatus for an electron bombardment heating apparatus, as described in the claim 5, wherein the switch is changed over upon a fact that the measured temperature value, which is measured by means of said thermal adjuster, reached  
20 to a preset temperature that is set in advance.

7. A method for controlling temperature due to heat generation of a heating plate for use in an electron bombardment type heating apparatus, in which the heating plate is heated through impingement of accelerated thermions emitted from a filament  
25 thereupon, including therein an electric power adjuster for controlling filament electric power to be supplied to the filament, comprising the following steps of:

controlling emission current to be a preset value by means of said electric power adjuster, while measuring the emission  
30 current flowing between the filament and the heating plate by means of an emission current adjuster, when the temperature of the heating plate rises up; and

controlling the temperature of the heating plate to be a preset temperature by means of said electric power adjuster, while measuring the temperature of the heating plate by means of a thermal adjuster, after the temperature reaches to a preset control  
5 temperature or temperature a little bit lower than the preset temperature.

8. The method for controlling temperature for an electron bombardment type heating apparatus, as described in the claim 7, wherein exchange between the emission current adjuster and the  
10 thermal adjuster is conducted by means of a switch, when the measured value of the temperature of the heating plate by means of the thermal adjuster reaches to a preset temperature which is set in advance.